EXPERIMENT - 25

Object Oriented Programming Lab

Aim

Write a program to raise an exception if any attempt is made to refer to an element whose index is beyond the array size.

Syeda Reeha Quasar
14114802719
4C7

EXPERIMENT – 25

Aim:

Write a program to raise an exception if any attempt is made to refer to an element whose index is beyond the array size.

Source Code:

```
#include <iostream>
using namespace std;

int main()
{
    int arr[] = {1, 2, 3, 4, 5};
    int n = sizeof(arr) / sizeof(int);
    int i;
    cout << "Size of array is : " << n << endl;
    cout << "Which index you want to access : ";
    cin >> i;
    try
    {
        if (i >= n)
        {
            throw i;
        }
        else
        {
            cout << "Element at " << i << " is : " << arr[i];
        }
    }
    catch (int)
    {
        std::cout << "Exception caught : Accessing index beyond of array size";
    }

    return 0;
}
```

Output:

```
PS D:\sem 4\cpp\oops> cd "d:\sem 4\cpp\oops\" ; if ($?) { g++ ArrayIndexError.cpp -o ArrayIndexError } ; if ($?
) { .\ArrayIndexError }
Size of array is : 5
Which index you want to access : 3
Element at 3 is : 4
PS D:\sem 4\cpp\oops> cd "d:\sem 4\cpp\oops\" ; if ($?) { g++ ArrayIndexError.cpp -o ArrayIndexError } ; if ($?
) { .\ArrayIndexError }
Size of array is : 5
Which index you want to access : 6
Exception caught : Accessing index beyond of array size
PS D:\sem 4\cpp\oops>
```

```
Size of array is : 5
Which index you want to access : 3
Element at 3 is : 4
```

```
Size of array is : 5
Which index you want to access : 6
Exception caught : Accessing index beyond of array size
```

Viva Questions

Q1). What is an exception or error handling?

Ans.

An exception is a problem that arises during the execution of a program. A C++ exception is a response to an exceptional circumstance that arises while a program is running, such as an attempt to divide by zero.

Exceptions provide a way to transfer control from one part of a program to another. C++ exception handling is built upon three keywords: **try**, **catch**, and **throw**.

- **throw** − A program throws an exception when a problem shows up. This is done using a **throw** keyword.
- **catch** − A program catches an exception with an exception handler at the place in a program where you want to handle the problem. The **catch** keyword indicates the catching of an exception.
- **try** − A **try** block identifies a block of code for which particular exceptions will be activated. It's followed by one or more catch blocks.

Assuming a block will raise an exception, a method catches an exception using a combination of the **try** and **catch** keywords. A try/catch block is placed around the code that might generate an exception.

Q2). What does throw exception mean?

Ans.

Exceptions can be thrown anywhere within a code block using **throw** statement. The operand of the throw statement determines a type for the exception and can be any expression and the type of the result of the expression determines the type of exception thrown.

Q3). What does catch exception mean?

Ans.

The **catch** block following the **try** block catches any exception. You can specify what type of exception you want to catch and this is determined by the exception declaration that appears in parentheses following the keyword catch.

Q4). What are some standard exceptions in cpp?

Ans.

C++ provides a list of standard exceptions defined in **<exception>** which we can use in our programs. These are arranged in a parent-child class hierarchy shown below −